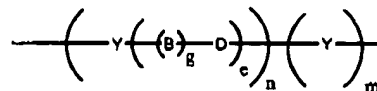


a) a test chamber comprising an array of electrodes each comprising:

i) a self-assembled monolayer; and

ii) a binding ligand covalently attached to said electrode via a conductive oligomer, wherein said conductive oligomer has the formula:



wherein

Y is an aromatic group;

n is an integer from 1 to 50;

g is either 1 or zero;

e is an integer from zero to 10; and

m is zero or 1;

wherein when g is 1, B-D is selected from acetylene, alkene, substituted alkene, amide, azo, esters, thioesters, -CH=N-, -CR=N-, -N=CH- and -N=CR-, -SiH=SiH-, -SiR=SiH-, -SiR=SiH-, and -SiR=SiR-, -SiH=CH-, -SiR=CH-, -SiH=CR-, -SiR=CR-, -CH=SiH-, -CR=SiH-, -CH=SiR-, and -CR=SiR-; and wherein when g is zero, e is 1 and D is [preferably] carbonyl, or a heteroatom moiety, wherein the heteroatom is selected from oxygen, sulfur, nitrogen, silicon or phosphorus;

wherein said test chamber further comprises at least one second measuring electrode; and

b) a voltage source electrically connected to said test chamber; and

c) an electronic detector.

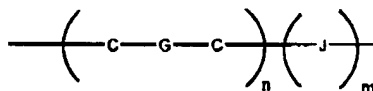
25. (Thrice Amended) An apparatus according to claim 20, 30, or 31 wherein said self-assembled monolayer comprises insulators.

26. (Thrice Amended) An apparatus according to claim 20, 30, or 31 wherein said self-assembled monolayer comprises conductive oligomers.
27. (Thrice Amended) An apparatus according to claim 20, 30, or 31 wherein said self-assembled monolayer comprises insulators and conductive oligomers.
28. (Thrice Amended) An apparatus according to claim 20, 30, or 31 wherein said binding ligand is a protein.
29. (Twice Amended) An apparatus according to claim 20, 30, or 31 further comprising a processor coupled to said electrodes and configured to receive an output signal.

Pleas add the following new claim:

--31. An apparatus for the detection of a non-nucleic acid target analyte in a test sample, comprising:

- a) a test chamber comprising an array of electrodes each comprising:
- i) a self-assembled monolayer; and
 - ii) a binding ligand covalently attached to said electrode via a conductive oligomer wherein said conductive oligomer has the formula:



wherein

n is an integer from 1 to 50;

m is 0 or 1;

C is carbon;

J is carbonyl or a heteroatom moiety, wherein the heteroatom is selected from the group consisting of oxygen, nitrogen, silicon, phosphorus, sulfur; and